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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,140	11/14/2003	Christos Tsironis		8195

7590 08/24/2006

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EXAMINER

NGUYEN, LEE

ART UNIT PAPER NUMBER

2618

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/712,140	TSIRONIS, CHRISTOS	
	Examiner	Art Unit	
	LEE NGUYEN	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 11/14/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-4 and 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3-4, the claims referred to both claims 1-2, it is unclear to which claim of claims 1 and 2, claims 3-4 depend. In the following art rejection, it is assumed that claims 3-4 depend on claim 2.

Regarding claims 7-8, the claims simultaneously claim both an apparatus and method. Therefore, the claims are indefinite under 112 second paragraph, see In EX Parte Lyell 17 USPQ2d 1548 (Bd.PA&I 1990).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Kiyokawa et al. (US 6,515,465).

Regarding claim 1, Kiyokawa teaches an electro-mechanical, microwave load pull tuner comprising an input (test) 108a and an output (idle) port 108b (see figures 14a-14b), a horizontal transmission airline in form of a slotted coaxial or parallel plate airline (slabline), see 105b in fig. 14a, a mobile carriage 107 movable parallel to the airline, which holds an adjustable resonant probe 50 to the airline (see figure 4) and means for remote control of horizontal and vertical movement of the carriage and of the probe (see col. 1, line 66 through col. 2, line 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiyokawa et al. in view of Tsironis (US 6,297,649).

Regarding claim 2, Kiyokawa further teaches that the adjustable resonant probe 50 is made of a vertical conductive stab 53 connected to a semi-cylindrical metallic base 53, capacitively coupled to the central conductor 41b of the airline 41a (fig. 4), the total mounted inside a cylindrical vertical conductive cavity 51b, the vertical stab 53 being movable vertically inside the cavity and the total cavity 51b (fig. 4), assembly, including the vertical stab 53, being movable horizontally and sliding on top of the slotted airline 41a (see figs. 4 and 14a-b). Kiyokawa fails to explicitly teach all movements being implemented using electrical stepper motors. Using electrical step motors to move the probe is conventionally well known, as taught by Tsironis in col. 4, lines 60-66. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Tsironis with Kiyokawa in order to facilitate the tuning.

Regarding claim 3, Kiyokawa also teaches that the position of the vertical stab inside the cavity can be adjusted in such a way that the variable capacitive coupling, formed between its semi-cylindrical base and the central conductor of the airline, allows controlling the amplitude of the microwave reflection factor created by this coupling (see absolute value and vertical, col. 2, lines 7-11).

Regarding claim 4, Kiyokawa also teaches that the horizontal position of the resonant probes can be modified in such a way, that the distance between each resonant probe and the test port of the said tuner can be adjusted and allow controlling the phase of the reflection factor presented at the input port of the tuner (see electrical angle and horizontal, col. 2, lines 5-7).

Regarding claim 5, Kiyokawa fails to teach including up to three independently controllable sections, each of which includes one resonant probe and associated electric motion control, each probe being adjusted to resonate at another frequency, said frequencies being typically, but not necessarily, harmonic frequencies multiples of a basic frequency. However, as taught by Tsironis, more than one resonant probe can be implemented (col. 4, lines 35-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Tsironis with Kiyokawa in order to obtain more data of reflected harmonics.

Regarding claim 6, Kiyokawa fails to teach that remote digital electrical control of the horizontal and vertical position of the resonant probes is implemented using a control computer operating appropriate control software. However, Tsironis teaches that controlling the position of the probe is implemented by using a computer (fig. 3B).). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Tsironis with Kiyokawa in order to obtain more data of reflected harmonics.


Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiyokawa et al. in view of the admitted prior art figure 19, and paragraphs [0075]-[0077] in the specification admitted by Applicant (referred to as the admitted prior art hereinafter).

Regarding claim 7, Kiyokawa fails to teach that scattering parameters (S-parameters) are measured using a calibrated vector network analyzer (VNA) between the test and idle ports of the tuner at a given frequency of operation and its two harmonics, as a function of the absolute horizontal and vertical position of each resonant probe and saved in a calibration data file for later use. This measurement is taught by the admitted prior art in figure 19 and paragraphs [0075]-[0077]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine admitted prior art with Kiyokawa in order to save data for future use.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone number is 571-272-7854. The examiner can normally be reached on FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDERSON D. MATTHEW can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


LEE NGUYEN
PRIMARY EXAMINER